

# JSF

## JOINT STRIKE FIGHTER

the next generation strike fighter



# JOINT STRIKE FIGHTER AUTONOMIC LOGISTICS

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Joint Strike Fighter Program Office  
Autonomic Logistics IPT Lead



# **VISION**

**BE THE MODEL ACQUISITION PROGRAM FOR  
JOINT SERVICE AND INTERNATIONAL  
COOPERATION**

**DEVELOP AND PRODUCE AN **AFFORDABLE** NEXT  
GENERATION STRIKE FIGHTER WEAPON SYSTEM  
AND SUSTAIN IT WORLDWIDE**



# SERVICE NEEDS



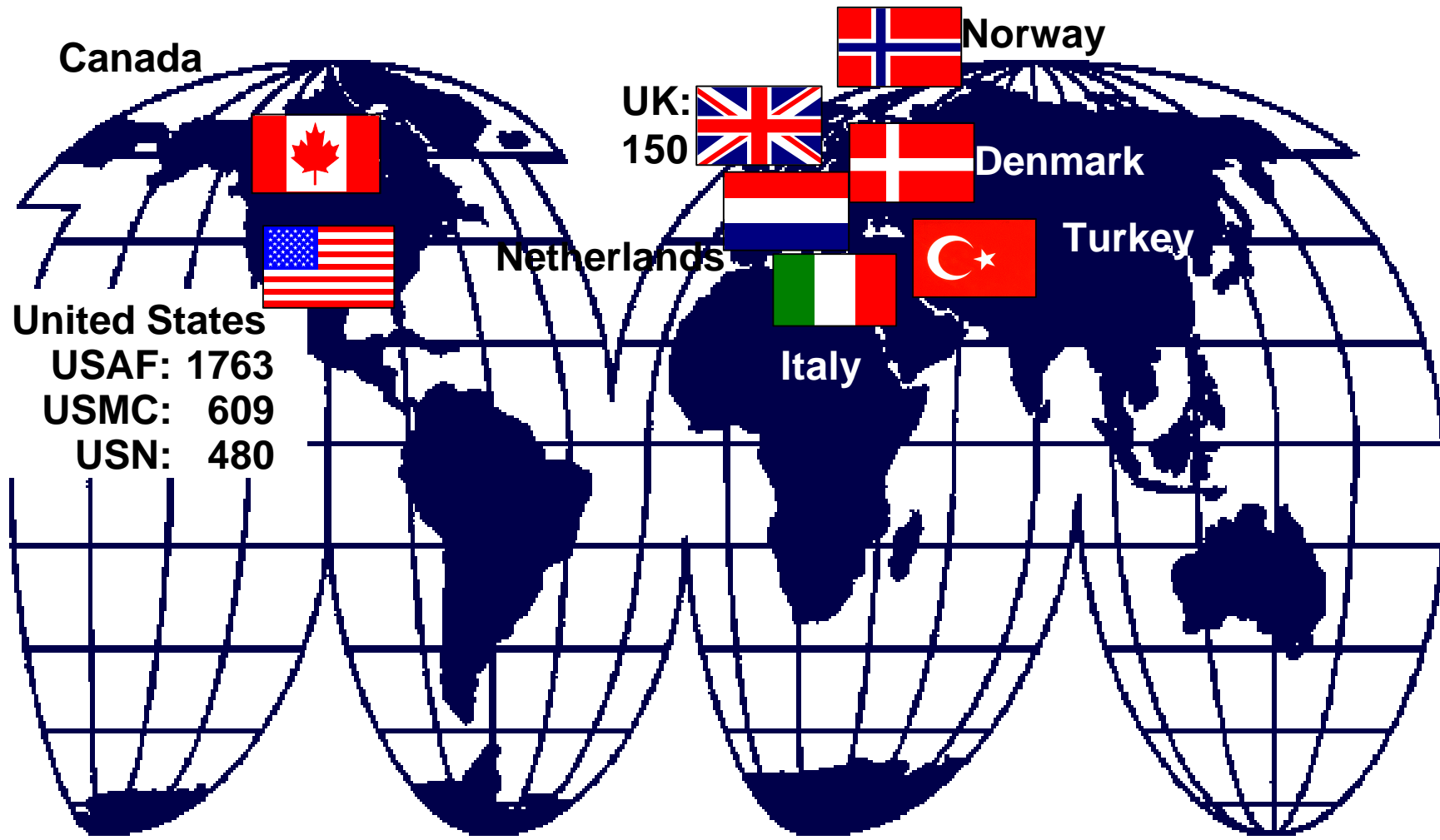
- **USN**                      **480**
  - Multi-role, stealthy strike fighter to complement the F/A-18E/F
- **USAF**                      **1763**
  - Multi-role (primary air-to-ground) fighter to replace the F-16 & A-10 & to complement the F-22
- **USMC**                      **609**
  - Multi-role, short takeoff, vertical landing strike fighter to replace the AV-8B & F/A-18C/D
- **UK (RN & RAF)**              **150**
  - Supersonic STOVL replacement for the Sea Harrier & GR-7



**3002 US/UK JSFs**



# POTENTIAL INTERNATIONAL PARTNERS



**> 2000 International JSFs**



# JSF: BUYING A CAPABILITY



***The traditional approach for buying an aircraft does not suffice when buying air system capability that is built on an integrated foundation of ...***



LETHALITY

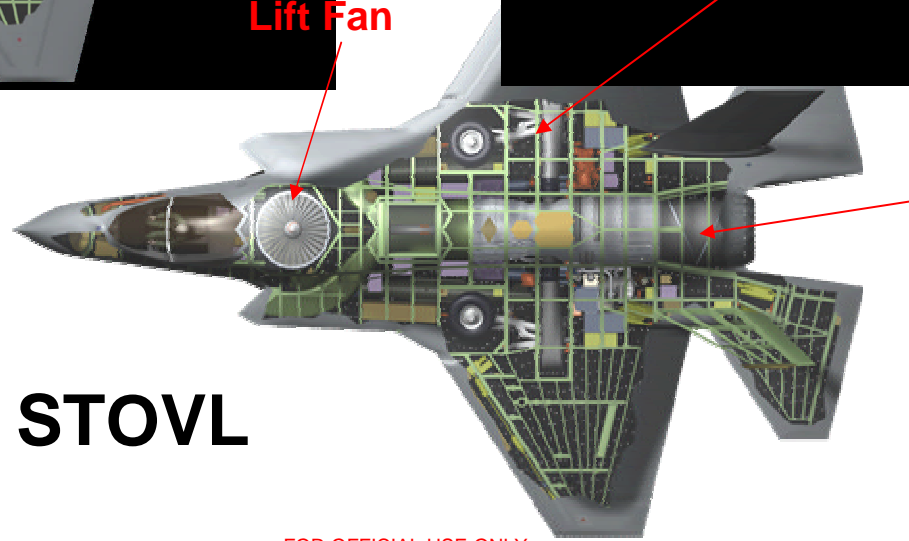
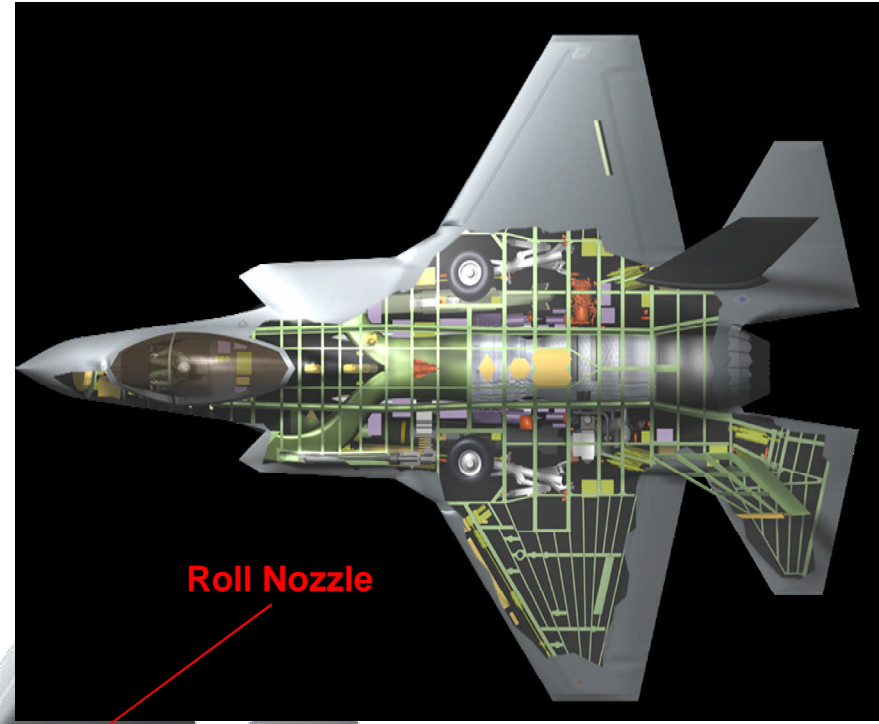
SUPPORTABILITY

SURVIVABILITY

***Buying & providing an affordable multi-mission strike capability to warfighters for the next half a century***



# LOCKHEED MARTIN MULTI-SERVICE DESIGN



Lift Fan

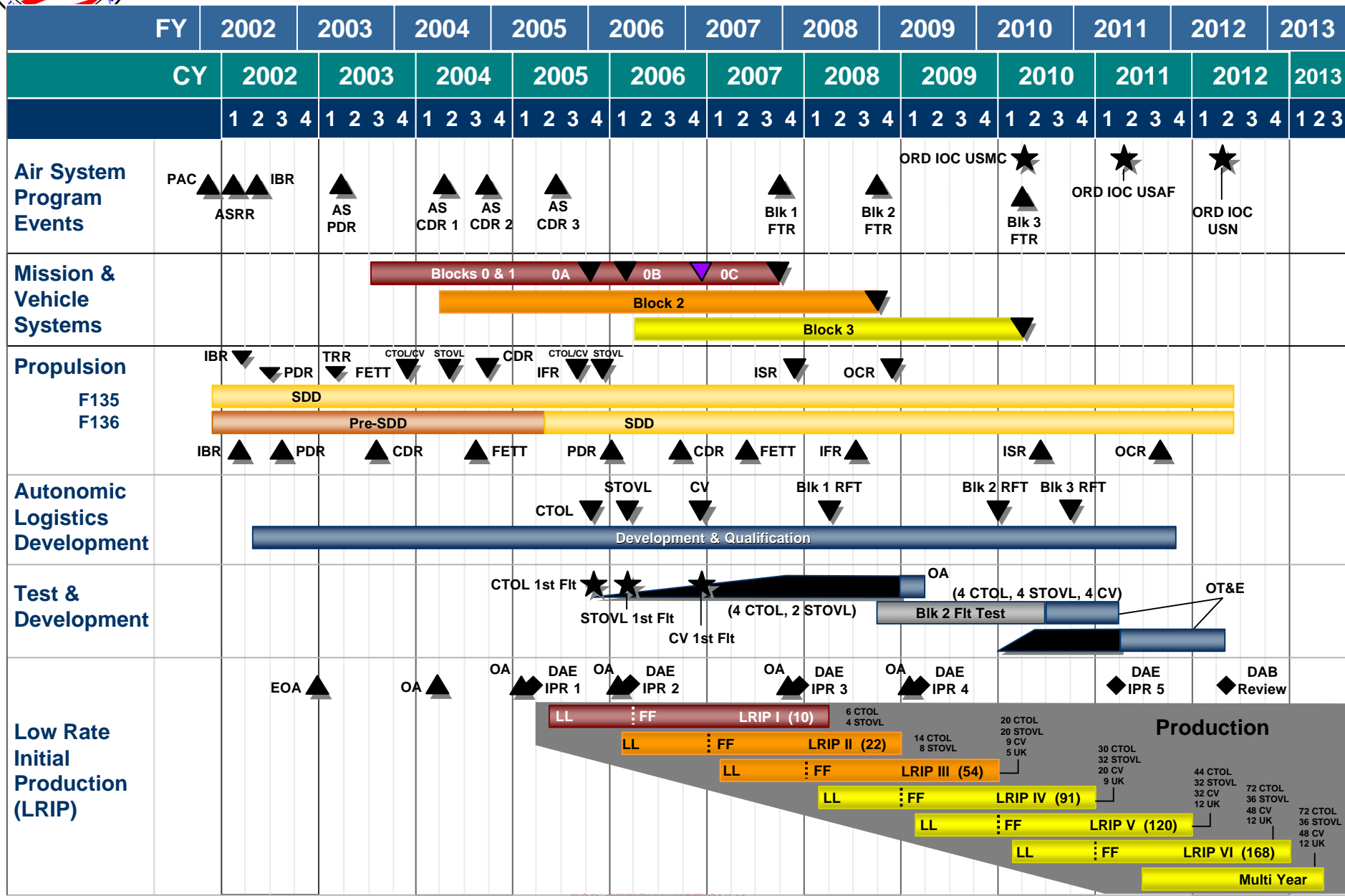
Roll Nozzle

3-Bearing  
Swivel  
Duct

STOVL



# SDD MASTER SCHEDULE





# WARFIGHTER'S MANDATE FOR CHANGE



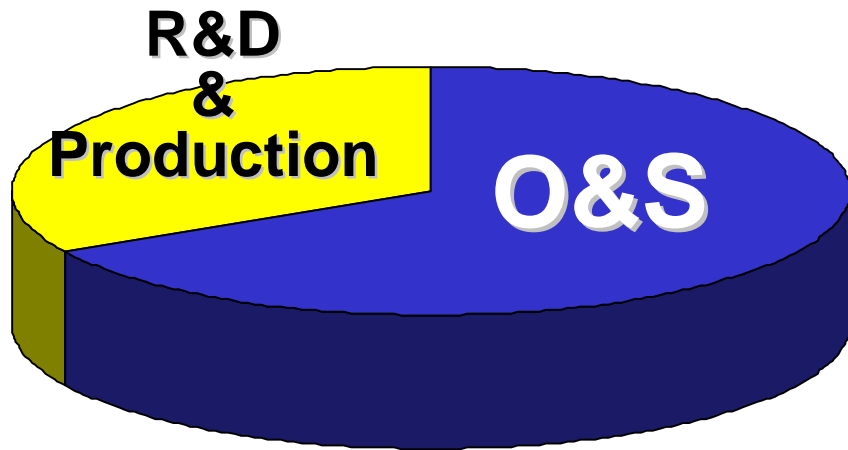
## ***Focused Logistics***

***“is the ability to provide the joint force with the right personnel, equipment & supplies in the right place, at the right time, & in the right quantity, across the full range of military operations.... Through transformational innovations to organizations & processes, focused logistics will provide the joint warfighter with support for all functions.”***

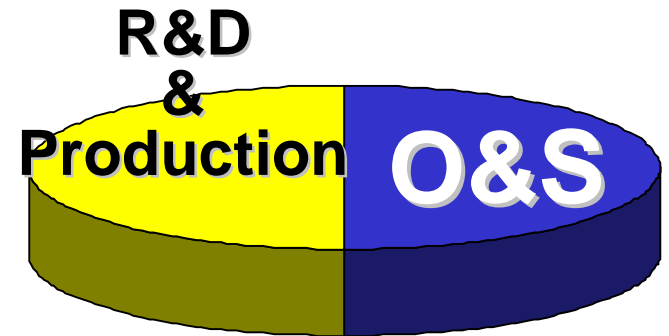
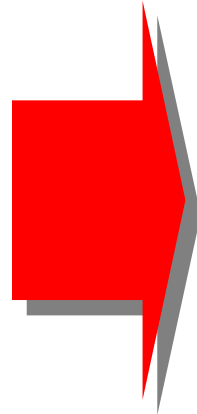
**Joint Vision 2020**



# AFFORDABILITY CHALLENGE



***TODAY***



***JSF***

***Note: O&S (Operations & Support) = Whole Life Support***



# LOGISTICS COST DRIVERS



## Mission Personnel

- Sortie generation rate, personnel infrastructure & training



## Unit Level Consumption

- Fuel consumption, depot level repairables, training munitions

## Maintenance Costs

- Reliability & maintainability



## Sustaining Support

- Sustaining engineering, software maintenance

## Indirect Support

- Base operations



# KEY PERFORMANCE PARAMETERS



USMC/UK ★

USN ★

Joint ★

**KPP**

**USMC**

**USAF**

**USN**

**UK**

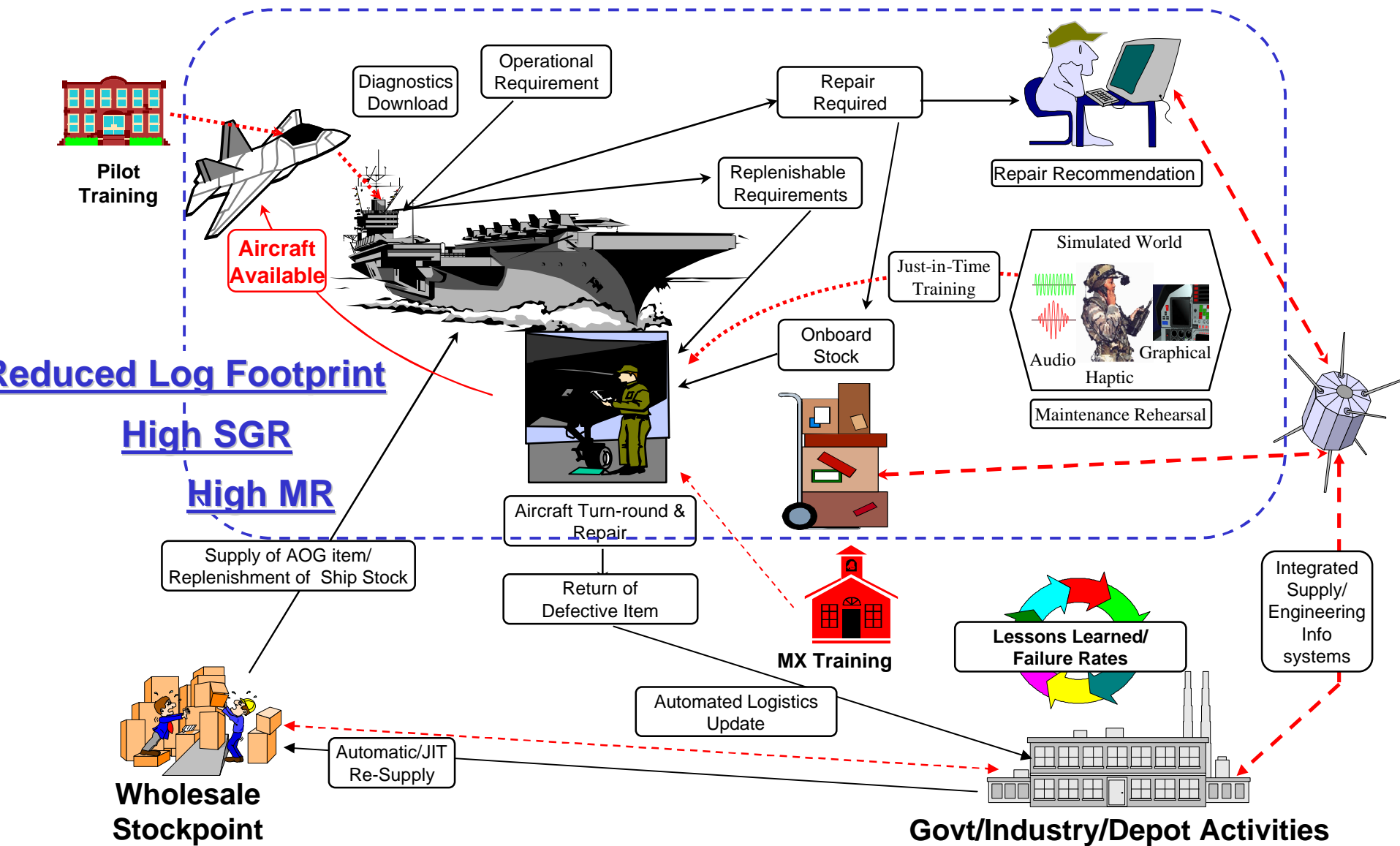


★ Radio Frequency Signature	Very Low Observable			
★ Combat Radius	450 nm USMC Profile	590 nm USAF Profile	600 nm USN Profile	450 nm UK Profile
★ Sortie Generation	4 Surg / 3 Sust	3 Surg / 2 Sust	3 Surg / 2 Sust	3 Surg / 2 Sust
★ Logistics Footprint	< 8 C-17 equivalent loads (20 PAA)	< 8 C-17 equivalent loads (24 PAA)	< 46,000 cu ft 243 ST	< 21,000 cu ft 102 ST
★ Mission Reliability	95%	93%	95%	95%
★ Interoperability	Secure Voice & Data Link Connectivity			
★ Vertical Lift Bring Back	2 x 1K JDAM, 2 x AIM-120 With Reserve Fuel	N/A	N/A	2 x 1K JDAM, 2 x AIM-120 With Reserve Fuel
★ Maximum Approach Speed	N/A	N/A	145 knots	N/A

***Projected to Meet or Exceed all Requirements***



# AUTONOMIC LOGISTICS CONOPS

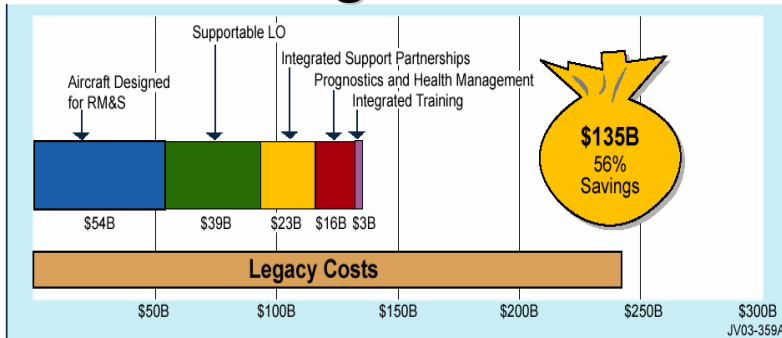




# AUTONOMIC LOGISTICS VISION



## Autonomic Logistics Goal:



>50% Reduction in Legacy Operations & Support Costs



### Achieved Through

- Air Vehicle Design
- Autonomic Logistics Design
- Tailored TSPIR Implementation & Execution (AL Business Approach)

### Guaranteed Performance Offering

- Performance Based Contracting

### Performance Contract Basis

- Pay for Use vice Failures

### Contractor Responsibilities

- Organizational Level Support Equipment, JTD, ALIS HW/SW & Spares
- Support Center & Training Center Ops
- Depot Level Maintenance & Repair/Return Management

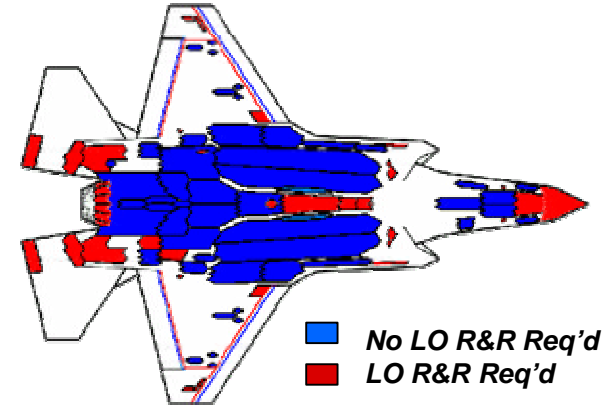
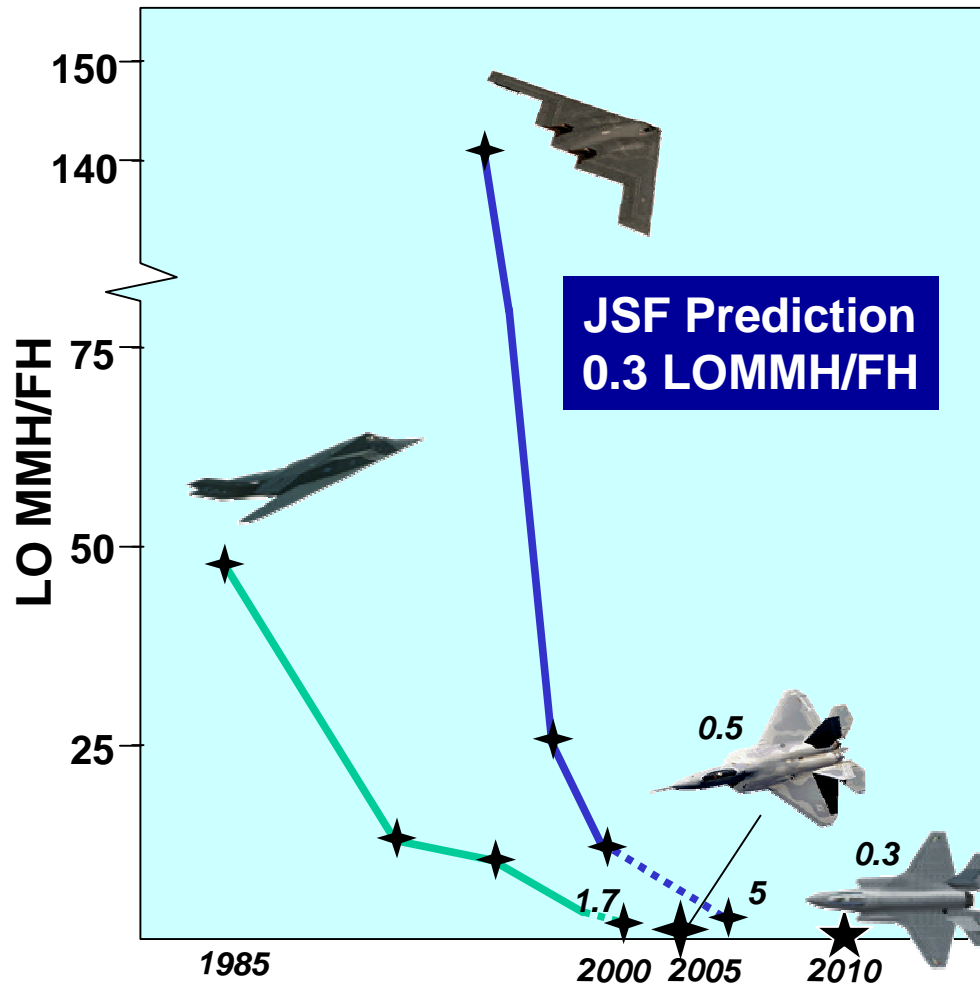
### Government Responsibilities

- Organizational Level Maintenance
- Training System Insight & Coordination





# SUBSTANTIALLY REDUCED LO MAINTENANCE

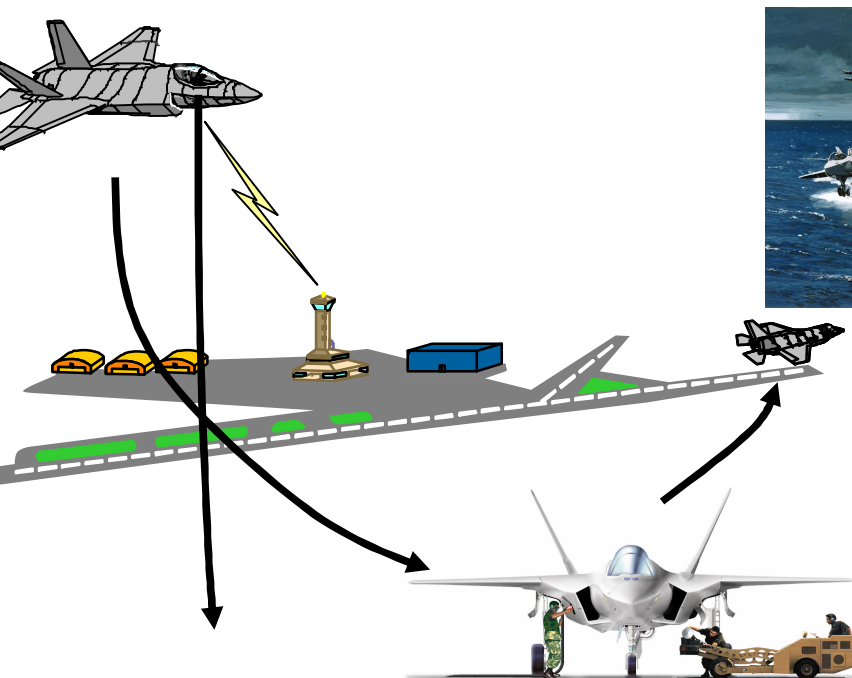


- Designed in Accessibility
- High Durability Materials
- Near Tapeless & Paintless Design
- Damage Tolerant LO Design

**99 Percent of all Maintenance Actions Require No Restoration**



# SORTIE GENERATION CYCLE CV PERFORMANCE



Repair Action

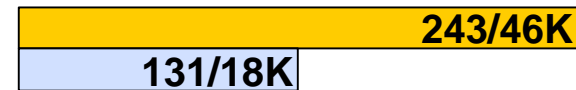
Service & Rearm



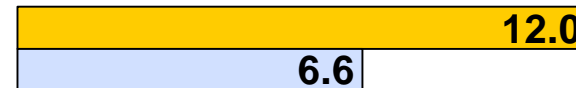
SGR



Log FP  
(Wt/Vol)



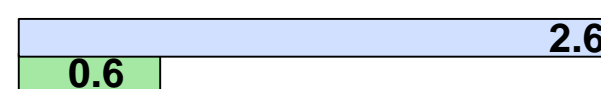
Manpower  
SPA



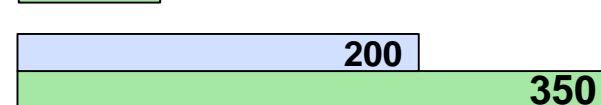
Sqdn  
Manpower



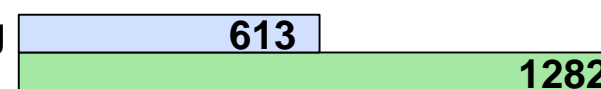
MFHBME  
(u)



Support.  
Equip.  
Types



Mx Training  
Tasks



***Deliver More Capability With Fewer Support Actions & Resources  
....with Trade Space***



# SUPPORTABILITY FEATURES & PHM



## Improved Reliability

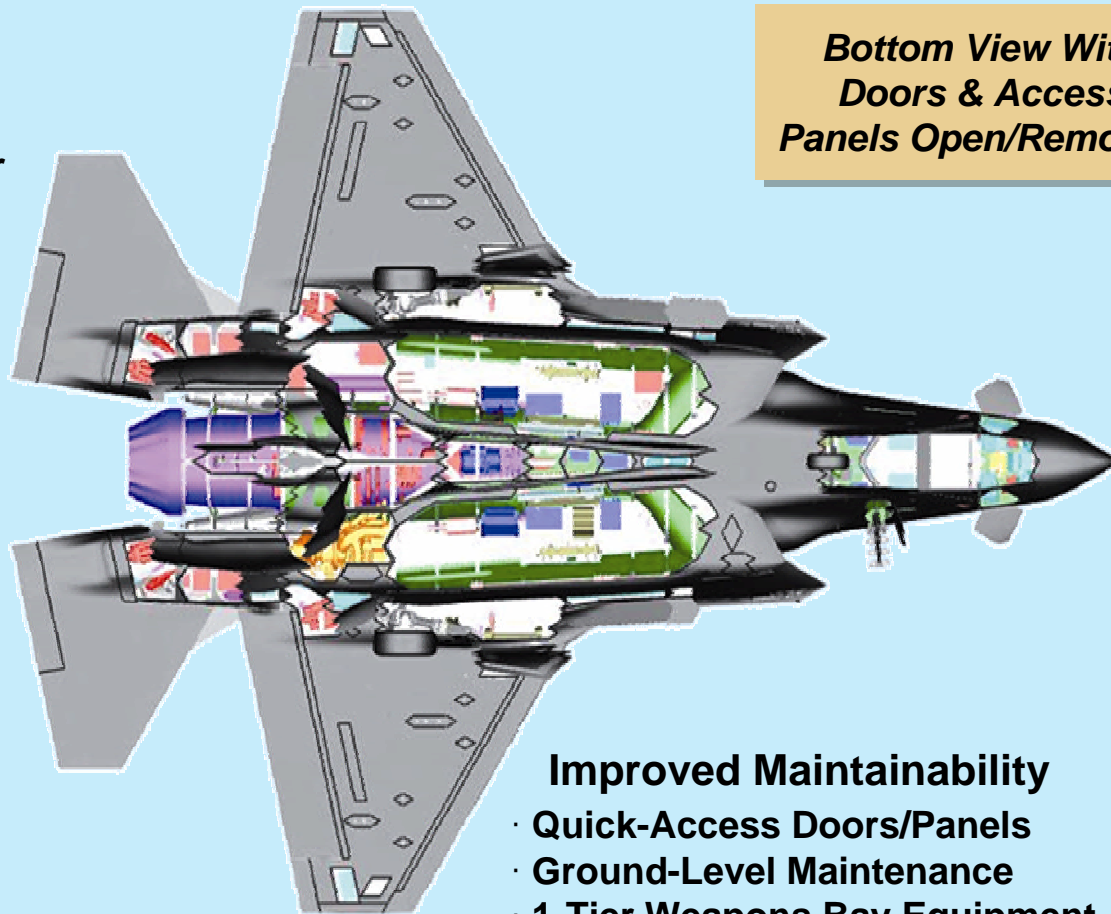
- Liquid-Cooled Avionics Backplanes/Convection Cooled Components
- More-Electric Secondary Power
- Durable Seals & Coatings
- Requirements Allocated to Suppliers

## Self-Sufficiency

- Non-Pyro Weapons Release
- On-Board Ground Power/Cooling
- On-Board Maintenance Panel
- Integrated Combat Turnaround Without Aircraft Support Equipment

## Integrated PHM

- Architecture Demonstrated
- Equipment Functionality Defined – Requirements Allocated to Suppliers
- Reliance on Symptom Correlation vice sensors



*Bottom View With  
Doors & Access  
Panels Open/Removed*

## Improved Maintainability

- Quick-Access Doors/Panels
- Ground-Level Maintenance
- 1-Tier Weapons Bay Equipment Access
- Conduction-Cooled Modules (Liquid in Rack Only)
- Tail-Over-Water Servicing/Wpns Loading



# AUTONOMIC LOGISTICS INFORMATION SYSTEM (ALIS)



Architecture Provides the  
Framework for Data Integration ...

... And Autonomically Converts  
Data Into Decision Enabling Information ...

... Resulting in Enhanced  
Mission Execution

## Theater Level

Commander's  
Intent

Immediate Air Asset Allocation



Hourly ATO Update  
and Redirection

## Wing Level

Mission Support Requirements  
Operational Awareness



Ability to Reallocate  
Mission Tasking by  
Aircraft

## Squadron Level

Maintenance and Support Requirements  
Resource Allocation



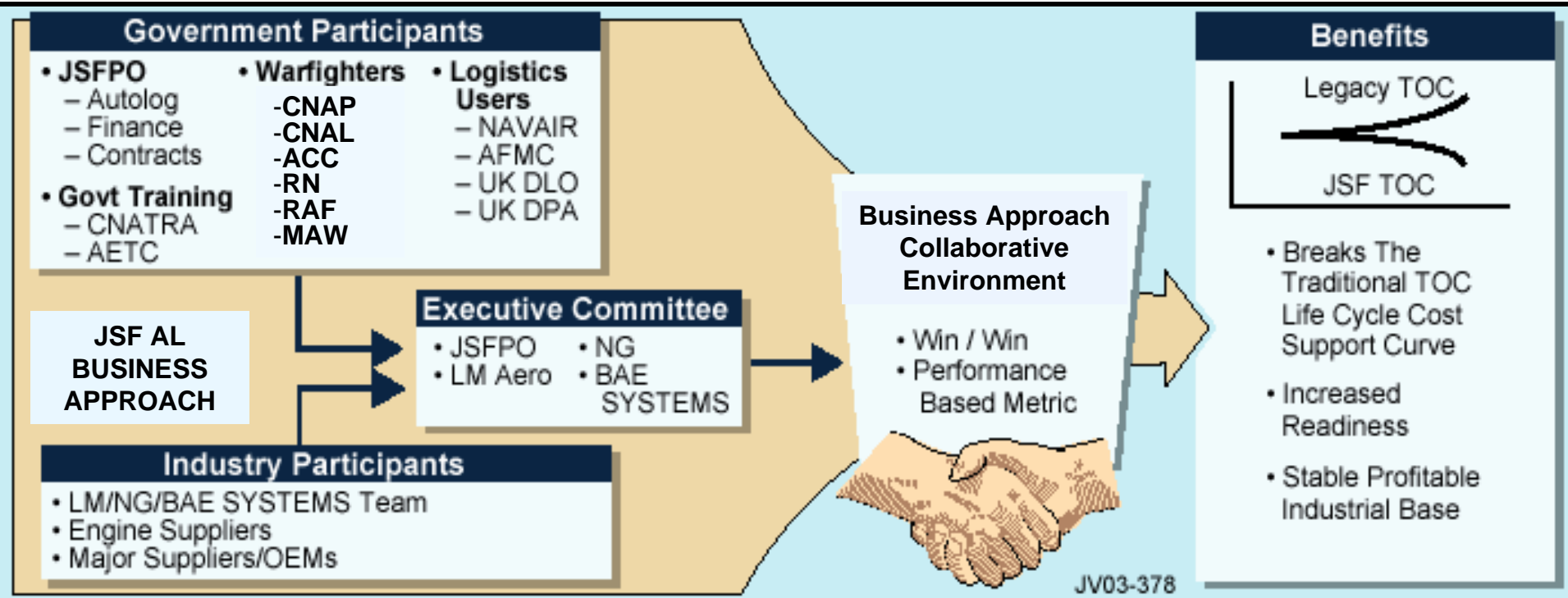
Maximizes Efficient  
Allocation of Support  
Resources

JE2-2177

***Provides Timely, Total Logistics Support***



# BUSINESS APPROACH



- Define Offering Scope
  - Support
  - Training
  - ALIS
- Define Contract Type/Phase
  - CPAF/IF SDD & LRIP
  - FFP LRIP & Prod

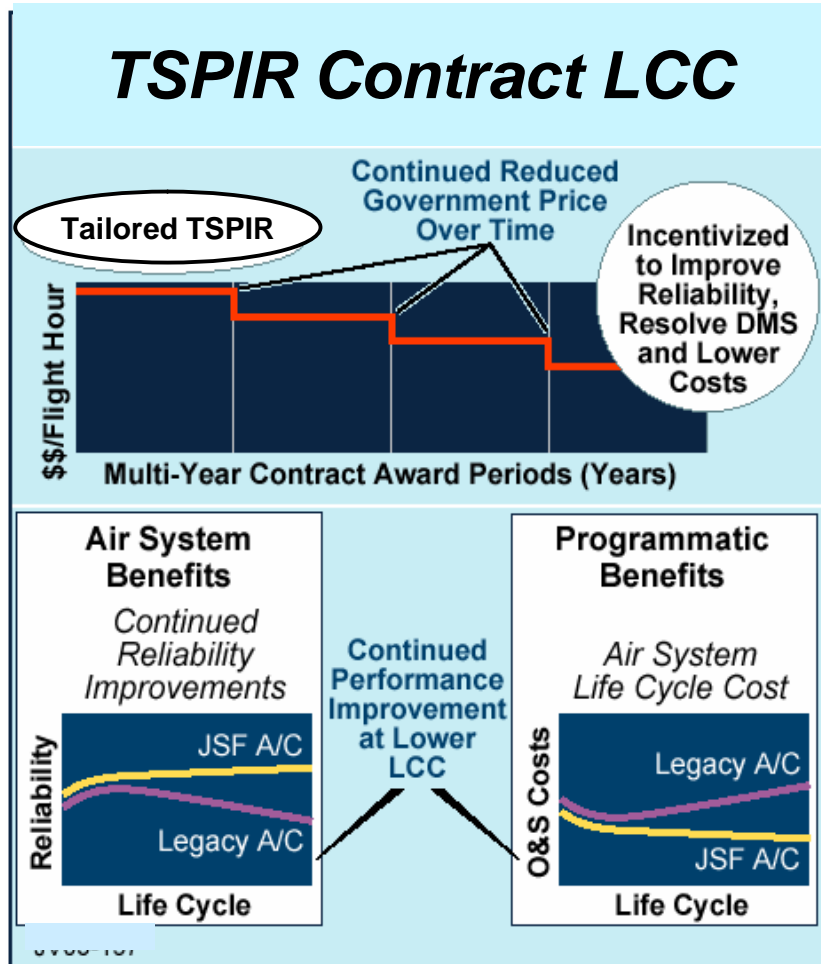
- Partnering Arrangements
  - OEMs
  - Govt. Depots
  - Title 10 Compliance

- Funding
  - Govt. Constraints
  - Funding Options
  - Colors of Money

**A Collaborative Government Contractor Integrated Business Team Develops the Optimal Business Approach for LRIP & Production**



# ACCOUNTABLE & INCENTIVIZED BUSINESS APPROACH



- **AWARD-TERM CONTRACT: PROVIDES DoD “OFF RAMP”**
- **“Power By The Hour” Concept – Fixed Revenue Per Flight Hour**
- **Inclusive Support – Logistics Not Lawyers**
- **Continuous Cost Reductions Only Method To Achieve Commercial Profitability**
- **Incentives/Penalties Flowed To All Teammates – Including DoD Depots & ICPs**
- **Comprehensive Support Per Flight Hour Cost Periodically Reduced Based On Learning Curve & Actuals**
- **Improved Component Reliability & Depot Turn-Around Times Perpetually Incentivized – Only Means To Enhance Profit Is Through Cost Reductions**



# JSF SDD COMMITMENT

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- **Develop (Design, Build & Test The First Articles) the AutoLog System**
  - Support System
  - Training System
  - Information System
- **Support Developmental Test (DT) Using the AutoLog System**
- **Support Operational Test & Evaluation (OT&E) Using the AutoLog System**
- **Establish Depot Capability – Title 10 Compliant**
- **Develop & Propose an Execution Plan for LRIP/Production (Government/Industry IPT)**



# SUMMARY



- **Warfighters Demand a More Agile, Responsive & Flexible Support & Training Solution**
- **The LM AutoLog Approach Delivers An Integrated Support, Training, & Information Environment to Provide World Class Warfighting Logistics at an Affordable Price**
- **Together With the JSFPO, We Will Demonstrate to the Services That TSPIR Can Be Implemented Successfully to Reduce Cost & Improve Readiness**

***By 2020, the JSF Will Comprise 75% of US Tactical Aircraft  
Affordability Is Not an Option***

***AUTONOMIC LOGISTICS WILL DELIVER***



**NORTHROP GRUMMAN**

**LOCKHEED MARTIN**

**BAE SYSTEMS**



# Joint Strike Fighter Autonomic Logistics System